FY 2001 Annual Report

SPECIALIZED INFORMATION SERVICES

Fiscal Year 2001 Programs and Services

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The Toxicology and Environmental Health Information Program (TEHIP), known originally as the Toxicology Information Program, was established more than 30 years ago within the National Library of Medicine in the Division of Specialized Information Services (SIS). Over the years TEHIP has provided for the increasing need for toxicological and environmental health information by taking advantage of new computer and communication technologies to provide more rapid access to a wider audience. We have moved beyond the bounds of the physical National Library of Medicine, exploring ways to point and link users to relevant sources of toxicological and environmental health information wherever these sources may reside. This is being accomplished primarily through the TEHIP and AIDS Web sites developed and maintained by SIS. Development of HIV/AIDS information resources became a focus of the Division several years ago, and now includes several collaborative efforts in information resource development and deployment, including a focus on the information needs of other special populations. This past year the Office on Outreach and Special Populations was established to coordinate activities in this area. Continuous refinements and additions to our Web-based systems are made to allow easy access to the wide range of information collected

by this Division. Our usage has continued to increase over the past year with access to all toxicology and HIV/AIDS data free over the internet.

In FY 2001 SIS selected several projects for significant re-engineering, proposing new opportunities to enhance SIS information resources and provide new services in emerging areas. Prototypes are underway utilizing graphical display of data from our information resources, innovative access and interfaces for consumers, and geographical information systems. Program direction has been guided in the past by two Institute of Medicine (IOM) reports focusing on the TEHIP Program: *Toxicology and Environmental Health Information Resources: the Role of the National Library of Medicine*, released in the Spring of 1997, and a follow-on report, *Internet Access to the NLM's Toxicology and Environmental Health Databases*, published in 1999. Both reports have been instrumental in our re-engineering efforts, and are used as reference for internal staff discussions at annual strategic planning retreats.

RESOURCE BUILDING

The wide range of resources related to toxicology and environmental health information, HIV/AIDS information, and special populations information include many databases that are created or acquired as well as other services and projects.

The **Hazardous Substances Data Bank (HSDB)** continues to be a highly used resource, averaging over 40,000 searches each month (a 30% increase over FY2000). Increased emphasis continues to be placed on providing more data on human toxicology and clinical medicine within HSDB, in keeping with past recommendations of the Board of Regents' Subcommittee on TEHIP. The selection of new members of the Scientific

Review Panel (SRP) for HSDB reflects this shift in content emphasis. Newer sources of relevant data are being examined for incorporation into new and existing data fields within the current 4,550 HSDB records. Because of increased staff efforts, more records are being processed through special enhancements, including source updates from various peer-reviewed files. Special summary information is being prepared to allow easier presentation of information at a health consumer level. The process of developing a new Web-based system for HSDB creation, review, and maintenance is continuing. An initial workshop to define some of the issues related to this re-engineering effort was held in October 2000, and needs analysis is well underway.

CHEMID*plus* (Chemical Identification File) is an NLM online chemical dictionary, which contains over 350,000 records, primarily describing chemicals of biomedical and regulatory importance, and available to users on the Web. ChemID*plus* features include chemical structure search and display for 100,000 chemicals, and hyperlinked fields that retrieve data for a given chemical from other resources such as MEDLINE or HSDB. Over 15,000 records of regulatory interest collectively known as SUPERLIST are also available and hyperlinked in ChemID*plus.* During FY2001, new software enhancements and a new server provided easier access to structure display and a more robust system for ChemID*plus*.

TOXLINE (Toxicology Information On-line) is a large NLM bibliographic database traditionally produced by merging "toxicology" subsets from secondary sources. By the end of FY2001, the database included over 3 million citations to toxicology literature going back to 1965. In FY2000, we began the transition to a next generation TOXLINE, reducing the components needed to produce the database by creating a

toxicology subset on NLM's PubMed so that users can access standard journal literature in toxicology and environmental health as part of an enlarging MEDLINE database. NLM added additional journals in the area of toxicology and environmental health to MEDLINE to cover some of the literature formerly provided by outside sources. For the non-standard journal literature in this area we created a Web-based system on TOXNET that allows efficient acquisition and updating of these components. Easy access to this TOXLINE Special database and to TOXLINE Core, the standard journal literature on PubMed, is available from the TOXNET web site.

DIRLINE (Directory of Information Resources On-line) is NLM's on-line directory of resources including organizations, databases, bulletin boards, as well as projects and programs with special biomedical subject focus. These resources provide information to users which may not be available from one of the other NLM bibliographic or factual databases. DIRLINE continues to receive a high level of use through a new interface, which became public in October 1999. This new interface supports direct links to the Web sites of the organizations listed in the database, as well as direct e-mail connections. Providing direct links for users facilitates ease of access for consumers as well as for health professionals. The quality and utility of the database continues to improve as duplicates have been eliminated through changes in policy and streamlining of maintenance. *Health Hotlines*, the always popular publication of health-related toll-free telephone numbers, has a Web version which also indicates the availability of Spanish speaking customer service representatives and Spanish language publications from the resources listed.

The **Toxic Chemical Release Inventory (TRI)** series of files now includes five on-line files, TRI95 through TRI99. These files remain an important resource for environmental release data and are a useful complement to our other databases. Mandated by the Emergency Planning and Community Right-to-Know Act (Title III of the Superfund Amendments and Reauthorization Act of 1986), these EPA databases contain data on environmental release data to air, water, and soil for over 600 EPA-specified chemicals. These files will be an important component of planned projects using geographical information systems.

The **Chemical Carcinogenesis Research Information System** (CCRIS) continues to be built, maintained, and made publicly accessible at NLM. This data bank is supported by the National Cancer Institute (NCI) and has grown to over 8,000 records. The chemical-specific data covers the areas of carcinogenesis, mutagenesis, tumor promotion and tumor inhibition.

The **Integrated Risk Information System** (IRIS), EPA's official health risk assessment file, continues to experience high usage and be very popular with the user community. EPA has had a version of IRIS on the agency's Web page since 1996, and as we move to Web access we will consider how best to integrate our Web service with what EPA provides. IRIS now contains 538 chemicals.

The **GENE-TOX** file is built directly on TOXNET by EPA scientific staff. This file contains peer-reviewed genetic toxicology (mutagenicity) studies for about 3,200 chemicals. GENE-TOX receives a high level of interest among users in other countries.

The **Registry of Toxic Effects of Chemical Substances** (RTECS) is a data bank based upon a National Institute for Occupational Safety and Health (NIOSH) file by the

same name which NLM restructured and made available for on-line searching. With our move to free Internet access to all databases, NIOSH requested that we no longer include RTECS on our system. We continue to use RTECS in the creation of the Hazardous Substance Data Bank.

The **Developmental and Reproductive Toxicology** (DART) database now contains over 49,000 citations from literature published since 1989 on agents that may cause birth defects. DART is a continuation of the Environmental Teratology Information Center backfile (ETICBACK) database, which contains almost 50,000 citations to literature published from 1950-1989. DART is funded by NLM, the Environmental Protection Agency, the National Institute of Environmental Health Sciences and the FDA's National Center for Toxicological Research, and is managed by NLM.

The **Environmental Mutagen Information Center** (EMIC) database contains over 24,000 citations to literature on agents that have been tested for genotoxic activity. A backfile for EMIC (EMICBACK) contains over 75,000 citations to the literature published from 1950-1991. The Environmental Protection Agency, the National Institute of Environmental Health Sciences and NLM, collaborating partners in this effort, stopped compiling this special collection as of December 1999, but we will keep the collections as part of the TOXLINE Special database on TOXNET.

RESOURCE ACCESS

The SIS Web server provides a central point of access for the varied programs, activities, and services of the Division. Through this server (http://sis.nlm.nih.gov) users can access interactive retrieval services in toxicology and environmental health, HIV/AIDS

information, or special population health information; find program descriptions and documentation; or be connected to outside related resources. During FY2001, we completed a redesign of the SIS Web site (http://sis.nlm.nih.gov) which now incorporates information about SIS in general, as well as toxicology and environmental health (http://sis.nlm.nih.gov/tehip.htm) and AIDS information (http://sis.nlm.nih.gov/hiv.htm). Both the toxicology and environmental health and AIDS Web pages provide links to NLM outreach activities in these subjects, access to NLM databases, links to selected Web sites in these subjects, as well as tutorials, fact sheets, and other publications produced by SIS.

Toxicology Data Network (TOXNET)

The **Toxicology Data Network (TOXNET)**, NLM?s information system providing database management for many of its toxicology files, has moved from a networked microprocessor environment to a UNIX-based platform (Solaris Version 2.6) on a SUN Enterprise 3000 computer. Integration of this configuration with other SIS database creation systems and the Web access to them is currently underway.

In FY2001, SIS continued the development of a new search interface to allow integrated access to the SIS toxicology and environmental health databases. This new search interface (http://toxnet.nlm.nih.gov) allows users to easily search HSDB, TOXLINE, CCRIS, Gene-Tox, DART, EMIC, IRIS, and TRI. Based on recommendations from the IOM, users are presented with a basic search screen with just a single input box for searching, with customized screens for more sophisticated users. These advanced features include Boolean searching and the ability to limit search terms to specific fields. A TOXNET user online survey is planned for the Fall of 2001. New search screen

designs were begun in 2001, and research and development projects such as a chemical spellchecker, automatic indexing, and a toxicology gateway system were carried out. Plans are underway to link the new NLM Gateway to the TOXNET search system, making it easier for new users to learn about our resources.

Chemical Structure Server

The chemical structure server has evolved from a mechanism to provide structure searching for chemicals covered by SIS databases to a system for integrating chemical dictionary record building and structure searching. This system uses special molecular searching programs and includes a prototype database for construction of ChemID records. The chemical information resources continue to be consolidated on a server (http:// chem.sis.nlm.nih.gov) that meets the requirements for chemical structure creation and access.

AIDS INFORMATION SERVICES

NLM has expanded its HIV/AIDS information services by expanding the number of relevant topic pages on Medline*plus* as well as completing an overhaul and major expansion to the AIDS Web site (http://aids.nlm.nih.gov). This Web site not only contains links to NLM's programs and services, but also a well-organized and expansive set of links to many HIV/AIDS resources more technical in nature than appropriate for Medline*plus*.

NLM has continued its successful AIDS Community Information Outreach Program with 16 new awards in FY2001, bringing the total number of awards made to 140.

NLM remains as the project manager for the multi-agency AIDS Clinical Trials Information Service (ACTIS) and the HIV/AIDS Treatment Information Service (ATIS). A new contract for support of NLM Clinical Information Services has been awarded that includes these services as well as certain support work for ClinicalTrials.gov and outreach programs.

OUTREACH / USER SUPPORT

SIS has initiated a project developing a set of population-specific mini Web sites that focus on the issues of particular populations or geographic areas. These Web sites include relevant policy, legislative, and organizational information as well as organized links to health and environmental issues of that particular population. The arctic health Web site (http://arctichealth.nlm.nih.gov) is the first of these to be released. The plan for these Web sites is for NLM to develop them and then work with a local university or agency more directly involved in the subject for continued maintenance.

NLM funded four outreach projects targeting minority populations and involving minority community-based organizations. These projects are intended to enable organizations to design local programs for improving access to consumer health information. The following organizations received funding for two-year projects:

Northern Wisconsin AHEC (Wausau, WI)

University of Rochester Health Sciences Library (Rochester, NY)

Harbor View Medical Center (Seattle, WA)

Virginia Commonwealth University (Richmond, VA)

SIS initiated a collaborative project with the DHHS Office of Minority Health (OMH). As part of their AIDS initiative, OMH conducted a needs assessment of community organizations in six major cities. Among the top needs identified by these community-based organizations was training in the use of the internet to find health information resources. NLM is collaborating on this effort and will be providing the training in searching Internet resources.

SIS continues its support of the Toxicology Information Outreach Project (TIOP). The objective of this initiative is to strengthen the capacity of Historically Black Colleges and Universities (HBCUs) to train medical and other health professionals in the use of NLM's toxicological, environmental, occupational health and hazardous waste information resources. This year TIOP celebrated its tenth anniversary at its annual meeting at the National Library of Medicine. TIOP also expanded by adding representation from the Oglala Lakota College, a tribal college, and from the University of Puerto Rico Medical School, a Hispanic Serving Institution. Training was conducted at both of these new participating schools. An assessment of the program was conducted and the results will be used to formulate additional activities.

A more recent addition to NLM's outreach programs is one to improve access to health-related disaster information in three disaster-prone Central American countries: Nicaragua, Honduras, and El Salvador. NLM is funding the Regional Disaster Information Center for Latin America and the Caribbean (CRID) to strengthen the capacity of these countries to collect, index, manage, store, and disseminate public health and medical information related to disasters.

SIS exhibited at over 30 conferences in this fiscal year. Several of these provided opportunities for presentations or workshops about NLM's information resources. In addition, SIS provided support for some conferences, including the Symposium on Career Opportunities in Biomedical Sciences sponsored by the Association of Minority Health Professions Schools. NLM also sponsored the e-health track at Expo2000 organized by Clark-Atlanta University for faculty and administrators from HBCUs, minority business leaders, and leaders of community organizations.

User Support Computer-Based Activities

SIS has developed a set of internet tutorials, *TOXICOLOGY TUTORS* , which are introductory level toxicology courses available on the SIS Web server. We are considering appropriate additions to this collection for development in the future. Other new avenues of user support are being focused at the consumer level, with a collaborative development of MEDLINE*plus* topics and addition of other special topics of concern to the general public to the SIS Web site. Our topics on Chemical Warfare Agents and Pesticide Control of West Nile Virus have been on the Web for over a year.

New topics, including one on Lingering Airborne Hazards of the World Trade Center Attacks, was released in the Fall of 2001.

Alternatives to Animal Testing

SIS continued to compile and publish references from the MEDLARS files that were identified as relevant to methods or procedures which could be used to reduce, refine, or replace animals in biomedical research and toxicological testing. Requests for these quarterly bibliographies have increased, as has the number of articles deemed relevant to the field. Bibliographies issued during the past four years are available on the internet through the SIS Web Server, and the primary distribution mechanism for this project is now the internet.

Other Specialized Services

In addition to toxicologic data files, SIS is evaluating other areas for creating specialized factual and bibliographic databases. Resource allocations are being made to determine the feasibility of initiating more clinical medicine information products for public, health professional, and scientific audiences. SIS has begun a critical review of its role in organizing and disseminating drug information in various formats, exploring a role in the assessment of the integrity and validity of such information. Another new project is developing a symptom and occupation based clinical medicine resource appropriate for use on the Web. Yet another initiative is preparing a Web resource for consumers that links brand name household products with their ingredient chemicals and potential

adverse health effects. Both of these products are ready for beta testing, and are expected to be made available on the SIS Web site in 2002.

In these and other new initiatives, SIS continues to search for new ways to be responsive to user needs in acquiring and using toxicology and environmental health, HIV/AIDS, and other specialized information resources.